ATTACHMENT G – DILUTION MODEL INFORMATION

The dilution model used to determine the dilution factor of the San Elijo Ocean Outfall (SEOO) was Visual Plumes (UM3 Model). The USEPA Visual Plumes website is located at <http://www.epa.gov/ceampubl/swater/vplume/index.htm>.

The following information and assumptions were used for the input into the model:

Port diameter – 2 inches - Table 4-2 of the Report of Waste Discharge for the IBCS (RWD)

Port elevation – 0 feet - Part 4-3 of RWD indicates that the outfall lies on the ocean floor.

Vertical angle - -5 degrees - Table 4-2 of RWD

Horizontal angle – 0 degrees - The model does not have input abilities for a diffuser with ports facing various directions. A single direction for all ports was assigned. This will result in a conservative dilution factor.

Number of ports – 200 ports - Table 4-2 of RWD

Port spacing – 6 feet - Table 4-2 of RWD (IBCS) indicates that there are 100 ports on each side of the diffuser. The table also indicates that the ports are spaced every 12 feet. To account for two ports every 12 feet, the port spacing was entered as 6 ft, instead of the actual 12 feet (which would double the length of the diffuser).

Acute mix zone - Not relevant, value does not effect dilution factor as defined by the State Water Resources Control Board (State Water Board).

Chronic mix zone - Not relevant, value does not effect dilution factor as defined by the State Water Board.

Port depth – 148 feet - Table 4-2 of RWD, the Visual Plume manual suggests using the deepest port depth.

Effluent flow – 23.25 mgd – The total permitted flow. Note that the actual operating capacity of the outfall if 24.3 mgd.

Effluent salinity – 1.2 psu - The most conservative value was selected from Table 2-3 of the Report of Waste Discharge for HARRF (not IBCS).

Effluent temp – 22.5 °C The most conservative value was selected from Table 2-4 of the Report of Waste Discharge for HARRF (not IBCS).

Effluent concentration - Not relevant, input does not effect dilution factor.

Ambient data - Monthly ambient data submitted to the Regional Water Quality Control Board for the SEOO (monitoring station A0.5S - closest to the diffuser) for the time frame between June 2003 through May 2004 was entered. The most conservative month was used to determine the dilution factor (February 2004).

Far-field diffusion coefficient - 0.0003 m0.67/s2 - recommended in the Visual Plumes manual as a conservative value.

Special Settings Tab, Farfield Diffusivity Option - 4/3 Power Diffusivity was chosen based on the fact that the discharge is occurring in open water.

Special Settings Tab, Diffuser Port Contraction Coefficient - 0.61 - based on the use of cylindrical ports in the diffuser.

Special Settings Tab, Standard Light Adsorption Coefficient - 0.16 - recommended in the manual as a conservative value.